

Teaching Students to Visualize: Nine Key Questions for Success

Laura A. Rader

ABSTRACT: The seemingly simple task associated with formal reading instruction may be problematic for many students with speech and language delays who often enter school with meager literacy experiences (B. K. Gunn, D. C. Simmons, & E. J. Kame'enui, 1999). However, the challenges that students face may be reduced when reading instruction includes opportunities for students to turn inward and reflect on ways that they use their language to read and write. The ability to reflect inward and use language to visualize words was thought to be a powerful tool for this population. The author developed a 2-year pilot program to determine whether a set of 9 key questions would help this population of students to increase the visualization and retell skills necessary for effective reading comprehension.

KEYWORDS: *language development, reading, reading comprehension, retell skills, visualization*

MANY STUDENTS HAVE DIFFICULTIES with reading. On the 2003 National Assessment of Educational Progress (NAEP) Test, 37% of fourth-grade students and 26% of eighth-grade students fell below *basic* for reading (National Center for Education Statistics, 2003). This result indicates that one third to one fourth of U.S. students do not have adequate basic reading skills. Because reading is a salient part of life success, it is imperative that schools try alternative methods of teaching reading that promote enjoyment (Reis & Fogarty, 2006).

The reasons that some students struggle with reading are often as varied as the students (Duke & Pressley, 2005). According to the International Reading Association (IRA), all students "have the right to instruction designed with their specific needs in mind" (IRA, 2000, p. 3). The question is how to identify and address these needs. It can seem to be a daunting—if not impossible—task. However, no other skill taught in school and learned by students is more important than reading. Reading is a survival skill, and the failure to read during the elementary school years reduces a student's chances of success in school and life (Musti-Rao & Cartledge, 2007). Reading is also the gateway to all other knowledge. If

students do not read efficiently, the path is blocked to every subject they will encounter in their school years (National Center to Improve the Tools of Educators, 1996).

More students fail to learn to read by the end of the third grade than many people imagine. It is not an exaggeration to say that all schools encounter students who fall into this category and that all schools should have plans for addressing the special needs of these students. Students who do not learn to read during the first 3 years of school may experience enormous difficulty when they are asked to read to learn. If students do not develop efficient reading skills during this time, history, mathematics, current events, and the rich tapestries of literature and science become inaccessible.

Reading and Language Development

Language and vocabulary represent the foundation of learning to read and write, and children who do not develop strong oral language skills and vocabulary will find it difficult to keep up with their peers (Neuman, 2006). Learning to read requires a student to learn specific rules and develop skills related to the English language system, such as awareness of sounds in spoken words and knowledge about letter-sound relations. Students have to learn that the squiggly lines on paper have meaning, and instruction is usually needed to teach students about the rules in written English (e.g., reading text from left to right across the page, spelling words correctly, and using correct punctuation) so that they can read and obtain information from the written words on a page. Once the words are read (i.e., decoded) the student needs to process, interpret, organize, and store the information efficiently so that he or she can find or retrieve that information again when necessary. This process is likely to be one of the most

Address correspondence to Laura A. Rader, 100 Sheldrake Place, Unit #4, Mamaroneck, NY 10543, USA; lar_rader@yahoo.com (e-mail). Copyright © 2010 Heldref Publications

difficult tasks that students with reading difficulties struggle with. Focusing on oral language development may be a key factor for students with difficulties in reading.

Oral language serves two important roles in literacy learning (Sulzby, 1996). First, it provides the foundation for reading and writing long before formal instruction begins (Hiebert, 1998). More specifically, students learn how to attend to language and then apply this knowledge to literacy situations by interacting with others who model language functions. A recent study indicated that from the age of 3 years onward, children need to build a vocabulary bank of at least 2,500 words per year, suggesting that language drives cognitive development, with words representing increasingly sophisticated ideas (Neuman, 2006). As people read, they use their knowledge of meanings (semantics), language structure (syntax), and letter-sound relations (phonics) to derive meaning from printed material (Kiefer, 2001). Thus, as Hiebert suggested, students' proficiency in oral language, their sense of words and sentences, sensitivity to the sound system, and understanding of the meanings of words influence their early attempts to read and write. However, the multiple functions of language that students use are likely to depend on the context and the desired function of a particular conversation.

Second, students use oral language to tell educators whether they understand what they are reading (Hiebert, 1998). Children use the natural medium of language for thinking (Neuman, 2006). Knowing how to read words has ultimately little value if the student is unable to construct meaning from the text (Klinger, Vaughn, & Boardman, 2007). When students' understanding of the text is incomplete, oral language is a means of expanding their understanding. Through discussions, students hear other perspectives of the text, including how their peers relate the text's content to knowledge about the world and personal experience.

Another factor that affects educators' ability to make sense of print is their intuitive understanding of how our language works (Kiefer, 2001). Most children come to school with much knowledge about their oral language. Generally, they know between 3,000 and 5,000 words (Gibson & Levin, 1975), which they comprehend orally and can order into grammatically correct sentences to communicate (Snow & Tabors, 1993). They have even learned a lot about the rules that govern conversation (e.g., listen to others when they speak, questions deserve answers, commands deserve a response). Most importantly, oral language—through conversations with parents, teachers, and peers—is the primary tool that most children use to discover how their world works. The critical task for students is to learn how to turn inward and reflect on ways they use their language to read and write (Goldenberg, 1992–1993). It is the nonvisual information and past experiences with language, books, and the world that help people derive meaning (Kiefer).

However, this seemingly simple task associated with formal reading instruction can be problematic for many students with language-learning disabilities who often enter school with meager literacy experiences. (Gunn, Simmons, & Kame'enui, 1999). Over many decades, researchers' efforts to understand key issues in the reading performance of those children who are the most at risk for developing later reading problems have been relentless (e.g., Gersten & Dimino, 2006; Snow, Burns, & Griffin, 1998). Moreover, teachers who are charged with developing beginning reading skills for students with a language-learning disability likely face significant challenges. Consequently, many teachers use whatever strategies they can to help students with reading (Staal, 2000).

Language Development and Retell Skills

The challenges that teachers and students face may be reduced when reading instruction includes opportunities for students to turn inward and reflect on ways that they use their language to read and write. It is interesting to note that the skill of retelling seems to be an effective tool associated with the task of using oral language to establish meaning from text and should be a key component when providing reading instruction to this population of students. Retelling a story demonstrates a student's ability to identify the story's important events and also provides a purpose for continued reading (Klinger et al., 2007). Likewise, retelling gives teachers insight into students' language levels, comprehension, vocabulary, and background knowledge (Slater, 2004).

Specifically, retelling requires the reader to provide a personal version of the text. To develop this personal version, the reader must think about the text holistically, considering its organization and important points. Whereas good readers are accustomed to thinking about text in this way, poor readers have difficulty doing so. This is why retelling may be a particularly effective strategy for use with students who have been identified as poor readers because of a language-learning disability.

Retell Skills and Visual Imagery

One of the key components for a successful retell is visual imagery. According to Zwiers (2004), visualization is the process of creating mental images and associations using previous knowledge. It is a skill that enables people to (a) form pictures in their minds that represent the content of what they have just heard or read, (b) organize and store new information, (c) form ideas and draw conclusions, (d) retrieve information, and (e) explain what they understand to others by turning the pictures or images back into words. In other words, students construct mental images that represent text content and then construct graphic representations of their mental images (Klinger et al., 2007). Language skills

form an essential foundation for completing the visualization process. Results of clinical studies have indicated that the visualizing process significantly improves reading comprehension. By changing spoken or printed words to pictures in students' minds, the visualization process helps them to process, organize, and store new information. By changing those pictures or mental images back to words, the verbalization process helps to let others know what they are thinking and how much they understand. Thus, according to Onofrey and Thurer (2007), visualization is a tool that is used to make sense of events shared orally and textually.

Unfortunately, numerous factors hinder the development of visualization. Three significant barriers include a lack of background knowledge, inattention to punctuation and phrasing, and little personal involvement with the text (Manning, 2002). However, research on key factors that enhance visualization skills is limited, and investigating the key factors that influence visualization skills may become the necessary step for teachers who work with struggling readers. Thus, I developed a pilot program to determine whether visualization and oral language skills increase when students have knowledge and usage of a specific set of nine questions. In addition, because there was an emphasis on scores obtained on state-required tests, the pilot program further investigated whether knowledge and use of the nine questions increased the number of students who met or exceeded state benchmarks on the Developmental Reading Assessment (DRA; Beaver, 2006).

Pilot Program

School and City Demographics

I established a 2-year pilot program in an urban elementary school environment to measure the benefits of teaching visualization and oral language skills to improve the ability of a selected group of students in Grade 1 to retell a story. The school had not met adequate yearly progress under No Child Left Behind (2008) regulations for several years despite numerous programmatic, curricular, and personnel changes. In addition, the school was required to develop a school improvement plan with the State Department of Education in accordance with federal government mandate.

The school where I conducted the present study was located in a city of approximately 60,000 residents, with a median household income of \$44,000. There were 12 public schools in the district educating approximately 9,000 students. Although U.S. Census statistics are likely to change when reports are disseminated in the future, at present, the city population makeup is as follows: 47% Hispanic or Latino, 42% White, 10% Black, and 1% Asian American. I conducted the program in a school that was clearly representative of these statistics.

Participants

There were 69 students who participated in the program; of these, 33 received the intervention, whereas 36 did not. In accordance with the Individuals With Disabilities Education Act (IDEA, 2001), all participants were identified as having a speech and language delay, being at risk for reading failure, or both. At-risk status was determined by students' exit scores on an assessment for Concepts About Print (CAP) taken during kindergarten. Specifically, students who entered first grade with less than half of the CAP were selected for the study. I matched student skill level, gender, race, and ethnicity in each group before the start of the study, and the numbers remained relatively stable (other than a few students who moved) throughout the program.

Procedure

At the beginning of January (after students returned from winter break), I created a test using a paragraph spoken to the students to use as pretest and posttest measures. In January, I read a short simple paragraph (61 words, 5 sentences) to each student. In May, I read the paragraph again to each student (see Appendix A). For each administration, I asked students to listen to the paragraph, make pictures in their minds about the story, and then tell the story back to me. Their retell was checked for completeness in two ways: the number of preselected concepts from the paragraph in their retell and the number of words in their retell. I then asked students to tell what the story was mostly about. Last, I established a rubric for scoring this item.

Scores were compared between all students in Grade 1 who participated and those who did not participate in the pilot program. Specifically, I compared scores from pre- and posttest data related to the nine key questions. I also compared the benchmark scores students obtained on the state DRA—administered by the classroom teachers—between all students in Grades 1 and 2 after the 2nd year.

Program Description

The program was designed around a set of nine questions (see Appendix B) that Bell (1991) developed. The goal of the program lessons was to provide students with the opportunity to learn and use this set of nine questions to ask themselves when trying to work through the visualization process. Students were specifically taught to use these nine key questions to help them organize their verbal descriptions to explain to themselves and someone else the message that they were verbally trying to convey. The questions were sequenced and systematically introduced to students in a gradual manner so that the students had time to practice using each of the questions as an isolated construct before using them all together in connected text.

I methodically introduced the questions to the students to help stimulate a more complete description from them

when they were speaking and communicating with others. Specifically, the program consisted of a variety of lessons that progressed in complexity so that students were able to use their knowledge and experience with each of the nine questions. In particular, the teachers progressed through lessons that included techniques such as draw and label visualization (McLaughlin 2003), mind and alternate mind portraits (McLaughlin), visualizing with wordless picture books (Goudvis & Harvey, 2000), visualizing from a vivid piece of text, visualizing in reading, showing not telling (Goudvis & Harvey), and creating mental images that go beyond visualization (Goudvis & Harvey). It was this design method—the progression through the techniques previously identified—that provided students with the opportunity to sustain and maintain usage of each of the 9 questions throughout program implementation.

Typically, the lessons were conducted on a weekly basis by the certified classroom teacher and were delivered through a script. The lessons progressed in a sequential format so that all nine questions were taught during a 3-month period. (Teachers were asked to present lessons only during a full week of instruction and not during weeks with vacation or holidays.) The school-certified speech-language pathologist trained all of the classroom teachers to ensure that the teachers were implementing the program similarly.

Results

Discussion

The effectiveness of the piloted visualization and oral language program was positive and beneficial for students at risk for reading failure and for students with speech and language delays. Specifically, knowledge and usage of the nine key questions improved student development of visualization and oral language skills. When comparing the results of the pre- and posttests (see Tables 1–3) of the spoken paragraph during the second year (time constraints did not allow data collection for the first year), it was clear that students had a more

detailed and complete retell of the paragraph when they received the visualization and oral language training. In addition, students generally made gains in their ability to verbalize the main idea of a spoken paragraph when they received the visualization and oral language program. Further discussion revealed that one class appeared to have made gains without the program. Although there are many possible reasons for these gains, I noted that

TABLE 1. Average Scores on the Number of Concepts in the Retell of a Spoken Paragraph

Variable	Class 1 ^a	Class 2 ^a	Class 3 ^b	Class 4 ^b
January	3.9	3.3	3.2	4.1
May	6.4	4.5	6.6	6.6
Change	+2.5	+1.2	+3.4	+2.5

Note. For Classes 1, 2, and 4, $n = 17$; for Class 3, $n = 18$. The pretest was conducted in January; the posttest was conducted in May. The highest possible score was 14.

^aNo visualization and oral language program presented. ^bVisualization and oral language program presented until May testing.

TABLE 2. Average Scores on the Total Points Achieved on the Number of Words and Concepts in the Retell of a Spoken Paragraph

Variable	Class 1 ^a	Class 2 ^a	Class 3 ^b	Class 4 ^b
January	44.9	35.1	45.8	39.7
May	59.0	45.1	63.3	61.2
Change	+14.1	+10	+17.5	+21.5

Note. For Classes 1, 2, and 4, $n = 17$; for Class 3, $n = 18$. The pretest was conducted in January; the posttest was conducted in May.

^aNo visualization and oral language program presented. ^bVisualization and oral language program presented until May testing.

TABLE 3. Percentage of Students Who Correctly Verbalized the Main Idea of the Same Spoken Paragraph

Variable	Class 1 ^a	Class 2 ^a	Class 3 ^b	Class 4 ^b
January	1–7	0	0	1–7
May	7–41	1–7	9–60	8–44
Change (in number of students)	+6	+1	+9	+7
Increase (%)	34	7	60	37

Note. For Classes 1, 2, and 4, $n = 17$; for Class 3, $n = 18$. The pretest was conducted in January; the posttest was conducted in May.

^aNo visualization and oral language program presented. ^bVisualization and oral language program presented until May testing.

this class had an additional paraprofessional in the classroom who provided additional daily support to the identified students in this one class. Thus, the results from this class may have been unknowingly affected by the additional daily support by the paraprofessional.

In reviewing and discussing results from state DRA testing, it was clear that the program had a significant impact. More specifically, the number of students meeting state DRA benchmark scores was higher for the students who received the program. Although the results reflect total class participant scores (17 students in most classes, 18 in one class), individual student scores were tracked, and it was clear that the majority of students made gains in their scores. Similarly, some students achieved more growth than expected and consequently met state benchmarks. In addition, perhaps the most significant finding was that second-grade students who received the visualization and oral-language program during their first-grade year appeared to have maintained their skills. More specifically, the percentage of students meeting state DRA benchmarks was higher for those students who received the visualization and oral language training (see Tables 4 and 5). The results from the second grade showed that students not only maintained their knowledge of the visualizing process, but also continued to use it and transfer the information 1 year later.

Practical Implications

This study clearly shows that students identified as having a speech and language delay or being at risk for reading failure benefit from a visualization and oral language training program. In addition, because the results were reported for the second year of the study, I noted that concept attainment was long lasting and students did not regress over the summer months and vacations when regression typically occurs. Thus, this success of an identified group of students who have special needs or are at risk for reading failure is significant for all teachers as they consider program and curricular changes. As previously discussed, reading is the gateway to learning. The ability to understand and use written language has always been a prerequisite to the efficient acquisition of knowledge, and it is becoming increasingly important in today's information society.

The positive and potentially long-lasting effects of cultivating visualization skills, especially when linked to oral language development, cannot be overlooked. The visualization and oral language process is a powerful tool that can enable all students to have successful academic experiences across all curriculum areas.

Conclusion

Recent gains in educators' knowledge of the reading process have given them the tools to help the majority of students

TABLE 4. Comparison of State Developmental Reading Assessment Benchmark Scores of Students Who Received the Visualization and Oral-Language Program in Grade 1 With Students Who Did Not

Variable	Met or exceeded state benchmarks	Total number of students	% met or exceeded state benchmarks
Visualization and oral language program	28	33	85
No visualization and oral language program	28	36	78
Total	56	69	81

TABLE 5. Comparison of State Developmental Reading Assessment Benchmark Scores of Grade 2 Students Who Received the Visualization and Oral Language Program in Grade 1 With Grade 2 Students Who Did Not

Variable	Met or exceeded state benchmarks	Total number of students	% met or exceeded state benchmarks
Visualization and oral language program	31	33	93
No visualization and oral language program	30	36	83
Total	61	69	88

learn to read at the level required to function as effective individuals, workers, parents, and citizens in today's world. The challenge is to put this new knowledge in the hands of teachers, parents, and school administrators so that American students who otherwise would fail to learn to read will gain access to this important skill. Good reading instruction is explicit, intensive, and systematic, and it is nonnegotiable for students who are at risk for reading failure (Musti-Rao & Cartledge, 2007).

AUTHOR NOTE

Laura A. Rader is an assistant professor of special education in the Department of Educational Leadership and Special Education and the program head for the special education graduate program at the City College of New York, where she teaches graduate-level courses in differentiated instruction and literacy instruction for struggling learners. Her areas of interest include universal design for learning, assistive technology, inclusion self-determination, and differentiated instruction.

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APPENDIX A Pretest/Posttest

Teacher: _____

Pretest/Posttest
Visualization/Oral Language

Student Name: _____

Date: _____

1. Make a picture in your mind of a car. It can be any car, even if you don't have one at home. Tell me what you see. Tell me as much as you can think of so I can see it in my mind as well.

What is it?	
How big is it?	
What shape is it?	
What color is it?	
Is there any sound?	
How many are there?	
Where is it?	
Is there any action?	
What time is it?	

KEY QUESTIONS CORRECT: TOTAL # OF WORDS
_____ / _____

2. I'm going to tell you a little story. Listen carefully, and make a picture in your mind as you hear it. Are you ready?

One day it snowed and snowed, and no one could go outside to play or go to school. When it stopped, the children went to the park. They made a snowman with three big snowballs and some rocks for eyes. Then they put a hat on his head, and last came the orange carrot for his nose! It was fun.

Now, tell the story back to me. Use your own words.

APPENDIX B 9 Key Questions (N. Bell, 1991)

1. What is it?
2. What size is it?
3. What shape is it?
4. What color is it?
5. Is there any sound?
6. How many are there?
7. Where is it?
8. Is there any action?
9. What time is it?

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